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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,484	08/19/2003	Koji Asami	02008.120001	5427

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EXAMINER

WILLIAMS, HOWARD L

ART UNIT PAPER NUMBER

2819

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/643,484	Applicant(s) ASAMI, KOJI	
	Examiner Howard L. Williams	Art Unit 2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15,16 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-10,17 and 18 is/are rejected.
- 7) ☒ Claim(s) 11-14 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>121703 & 082003</u> . | 6) <input type="checkbox"/> Other: ____ |

The examiner acknowledges the Information Disclosure Statements filed 20 August 2003 and 17 December 2003. An initialed copy of the citation form should accompany this action.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 7-9 are rejected under 35 U.S.C. 102(b) as anticipated by Apple et al. (US 5,239,299). Apple discloses a digitizer with plural converters (fig. 4). Each converter channel has its own digital equalization filter which receives the corresponding value of its respective correction coefficients to provide compensation for variations in gain, offset, phase/frequency response, and timing found amongst the plurality of time interleaved converters.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as unpatentable over Apple et al. (US 5,239,299) in view of Kost et al. (US 6,081,215). Apple et al. does not show an interleaver element after the digital filters. Kost et al. in an interleaving ADC system (48, 50) with subsequent filters for compensation and interleaving concatenator (86; fig. 4). It would have been obvious to use an interleaver such as taught by Kost in Apple to consolidate the compensated data stream for downstream circuitry in order to reduce the number of buses required.

Claims 4-6, 17 and 18 are rejected under 35 U.S.C. 103(a) as unpatentable over Apple et al. (US 5,239,299) in view of Tajiri et al. (JP 2000346913 A) and Tajiri et al. A *Method to Improve the Performance of High-Speed Waveform Digitizing*.

It is noted that the description specifies in conjunction with the calculation of correction coefficient and calculating the corrected value by convolution of the correction coefficient, that is a value of the impulse response function corresponding to the timing away from the ideal sample timing, and the digital value of the corresponding ADC as a precalculated phase error obtained by the application of a predetermined analog signal (pages 15 & 16).


Application of a sinusoidal waveform as a test signal is also disclosed in the Tajiri article to determine time alignment and gain error (page 952). As for the lofty sounding calculation of the convolution the paper also notes a well known principle, multiplication in the time domain is equivalent to convolution in the frequency domain and vice versa.

Apple also does not disclose the claimed test bed arrangement waveform generator, waveform shaper and comparison of the expected value of the waveform and the measured value. Tajiri et al. (JP 2000-346913 A) provides disclosure of such a test arrangement and a digitizer. It would have been obvious to utilize the Apple digitizer in conjunction with a semiconductor tester because the comparison of expected and measured values is a well known method of characterizing circuit operation.

Claims 11-14 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 15, 16 and 20 are allowed. The art of record does not appear to disclose the decimation unit for summing the corrected digital values or the use of the two interleaving elements.

Any inquiry concerning this communication should be directed to Howard L. Williams at telephone number 571.272.1815. The Patent and Trademark Office has a new central facsimile number for application specific correspondence intended for entry, it is 703-872-9306.

4/16/04
Voice 571.272.1815


Howard L. Williams
Primary Examiner
Art Unit 2819